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EXAMINER
OCAMPO, MARIANNE S

ART UNIT	PAPER NUMBER
1723	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/829,714	DENTON ET AL.	
	Examiner	Art Unit	
	Marianne S. Ocampo	1723	

-- Th MAILING DATE of this communication appears on the cover sh et with the correspondence addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10,18-20,22,23,25,26,39-46 and 52-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *52* is/are allowed.

6)☒ Claim(s) *1-7,10,18-20,22,23,25,26,39-45 and 53-65* is/are rejected.

7)☒ Claim(s) *46* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Applicant is advised that should claim 1 be found allowable, claims 64 and 65 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 20, 22 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyagi et al. (US 4,588,464).

4. Concerning claims 20 and 25, Miyagi et al. disclose a cylindrical filter media (3) comprising a plurality of longitudinally extending pleats and a side seam (by the edges 9), the plurality of pleats including two end pleats (9) each including a filtration layer (1 in the form of a fluorocarbon membrane), an inner layer (2, net supporter closer to an inner core 5) and an outer layer (2, net supporter closer to the outer periphery and cage 13), the two end pleats (9) each having a distal end, a radially inner peak, an endmost sidewall extending from the distal end to the radially inner peak and a radially outer peak, the (endmost) sidewalls of the two end pleats being positioned adjacent each other and the distal ends being positioned radially outward relative to the radially inward peaks (as in fig. 4), and the side seam comprising an adhesive bead (11 in the form of thermoplastic fluorocarbon resin) which encapsulates all of the layers (1, 2) in the distal ends of the end pleats (9) and the adhesive bead (11) extending radially inward between the respective sidewalls of the end pleats (9), as in fig. 4 and cols. 2 – 4.

5. Regarding claims 22 and 25, Miyagi et al. also disclose the adhesive bead (11) extending circumferentially the radially outward peaks of the two end pleats (9), as in fig. 4.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 - 3, 10, 18 - 19, 39 – 45, 53 - 58 and 64 – 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoyell et al. (US 5,690,765).

8. With regards to claims 1 and 64 - 65, Stoyell et al. disclose a microfilter element (10) capable of removing impurities in the range of about 0.5 μm to about 25.0 μm from fuel (which could be an aviation fuel or any hydrocarbon type of fuel), said element comprising a cylindrical filter media (10) and an exoskeleton (50) for the filter media, the filter media including a filtration layer (12) sandwiched between inner and outer layers (13 & 14), the filtration layer being made of fiberglass (i.e. glass) or at least one polymer, the inner and outer layers (13 & 14) being made of a non-woven polymer and the layers of filter media being folded into a plurality of longitudinally-extending pleats (11) and the exoskeleton (i.e. wrap or septum 50 which in the form of a porous non-woven or polymeric sheet/mesh) comprising a support screen (*the term "screen" has been considered to include any porous film, mesh or fabric*) (fusion) bonded to peaks of the pleats to support the pleats (11) in an appropriately spaced and non-collapsed condition, and the support screen (50) providing at least 50% open flow area and a tight array of attachment points (not shown) so that the filter media is sufficiently supported without having cellulose-fiber and/or woven-mesh endoskeleton support layers, as in cols. 3 – 6 and 17 – 23 and fig. 22. Although Stoyell et al. fail to disclose explicitly the layers of filter media being folded with a density of about 8 or more pleats per inner diameter inch, it is considered obvious to one

of ordinary skill in the art that the layers of filter media of the filter element of Stoyell et al. which is folded into a **laid-over** state/configuration (in which virtually all of the volume between the inner and outer peripheries of the filter may be occupied by the filter media and used for filtration, see col. 4, lines 23 – 35) providing the greatest amount of pleats per inner diameter inch, which could be at least/a minimum of 8 pleats or more per inner diameter inch. Furthermore, since the reference (Stoyell et al.) has disclosed all of the limitations of a claim except for this particular property (having a density of about 8 or more pleats per inner diameter inch), and the examiner cannot determine whether or not the reference (Stoyell et al.) inherently possesses the properties (i.e. in the form of the laid over state/configuration of the filter element) which anticipates or renders obvious the claimed invention, but has basis for shifting the burden of proof to applicants as in ***In re Fitzgerald***, 619 F. 2d 67, 205 USPQ 594 (CCPA 1980). See M.P.E.P. §§ 2112 – 2112.02.

9. With regards to claims 2, 53 and 56, Stoyell et al. further disclose the layers of the filter media (12, 13, 14) consist essentially of a filtration layer (12), the inner layer (13) and the outer layer (14), as in cols. 3 –6 and in figs. 3 – 4. Stoyell et al. further disclose the filtration layer (12) being made of any suitable material, such as synthetic polymers (which could include polypropylene, polyamide, polyester and such) and glass (i.e. fiberglass) and metal, as in col. 5, lines 30 – 37.

10. Regarding claims 3, 54 and 56, Stoyell et al. also disclose the filtration layer (12) and the inner and outer layers (13, 14) may each have/be formed into any desired thickness, which could include those of about 0.015 inch to about 0.035 inch for the filtration layer (12) and a thickness of about 0.008 to 0.017 inch for the inner and outer layers (claim 3), or a thickness less than about 0.030 inch (claims 54 and 56), as in cols. 5 – 7. Furthermore, it is considered obvious to one of ordinary skill in the art that the thickness of the layers of the filter media can be modified according to the choice/desires of the user/manufacturer, and the range of values for thickness of these layers (i.e. filtration and inner and outer layers) as claimed, are considered optimum values of a result-effective variable, which depends also upon the size of the filter housing and/or dirt-holding capacity of the end product (i.e. filter element). The case law, ***In re Boesch***, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) also stated:

"The discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art, and thus a prima facie case of obviousness is established."

11. Concerning claim 10, Stoyell et al. also disclose a filter element (10) comprising a cylindrical filter media and an exoskeleton (50) surrounding the filter media (10), the filter media being formed from only cellulose fiber-free and woven-mesh free layers (i.e. those formed of nonwoven polymeric, glass or metallic materials) including a filtration layer (12) sandwiched between inner and outer layers (13 & 14), the layers of the filter media (12, 13, 14) being folded into a plurality of longitudinally extending pleats (11) having radially inner peaks (11c) defining

an inner diameter, radially outer peaks (11b) defining an outer diameter and side walls (11d, 11a) extending therebetween and the exoskeleton support structure (50) being attached (fusion bonded) to the radially outer peaks in such a manner that the filter media (10) is sufficiently supported without celluloe-fiber and/or woven-mesh endoskeleton support layers and wherein the layers of the filter media consist essentially of the filtration layer (12), the inner layer (13) and the outer layer (14), as in figs. 3 – 4 and fig. 22 and cols. 3 – 6 and 17 – 22.

12. With regards to claims 18 - 19, Stoyell et al. disclose a filter element comprising a cylindrical filter media (10) and an exoskeleton support structure (in the form of a wrap/mesh 50) supporting the filter media (10), the filter media being formed from a plurality of layers (12, 13, 14) folded into a plurality of longitudinally extending pleats (11) having radially inner peaks (11c) defining an inner diameter, radially outer peaks (11b) defining an outer diameter and side walls (11d, 11a) extending therebetween, as in figs. 3 – 4 and fig. 22 and cols. 3 – 6 and 17 – 22. Although Stoyell et al. fail to disclose explicitly the layers of filter media being folded with a density of about 8 or more pleats per inner diameter inch (claim 18) or a density of about 12 or more pleats per inner diameter inch (claim 19), it is considered obvious to one of ordinary skill in the art that the layers of filter media of the filter element of Stoyell et al. which is folded into a **laid-over** state/configuration (in which virtually all of the volume between the inner and outer peripheries of the filter may be occupied by the filter media and used for filtration, see col. 4, lines 23 – 35) providing the greatest amount of pleats per inner diameter inch, which could be at least/a minimum of 8 pleats or more per inner diameter inch, or about 12 or more pleats per inner

diameter inch. Since the reference (Stoyell et al.) has disclosed all of the limitations of a claim except for these properties (having a density of about 8 or more pleats per inner diameter inch as in claim 18 and having a density of about 12 or more pleats per inner diameter inch as in claim 19), and the examiner cannot determine whether or not the reference (Stoyell et al.) inherently possesses the properties (i.e. in the form of the laid over state/configuration of the filter element) which anticipates or renders obvious the claimed invention, but has basis for shifting the burden of proof to applicants as in ***In re Fitzgerald***, 619 F. 2d 67, 205 USPQ 594 (CCPA 1980). See M.P.E.P. §§ 2112 – 2112.02.

13. Regarding claim 55, Stoyell et al. further disclose the inner and outer layers (13, 14) being each made of a nonwoven polymer, as in cols. 5, lines 51 - 67 and col. 7, lines 3 – 16.

14. With respect to claims 57 – 58, Although Stoyell et al. fail to disclose explicitly the filter media (10) having a pleat density of about 8 or more pleats per inner diameter inch (claims 57 – 58), it is considered obvious to one of ordinary skill in the art that the layers of filter media of the filter element of Stoyell et al. which is folded into a **laid-over** state/configuration (in which virtually all of the volume between the inner and outer peripheries of the filter may be occupied by the filter media and used for filtration, see col. 4, lines 23 – 35) providing the greatest amount of pleats per inner diameter inch, which could be at least/a minimum of 8 pleats or more per inner diameter inch. Furthermore, since the reference (Stoyell et al.) has disclosed all of the limitations of a claim except for this particular property (having a density of about 8 or

more pleats per inner diameter inch), and the examiner cannot determine whether or not the reference (Stoyell et al.) inherently possesses the properties (i.e. in the form of the laid over state/configuration of the filter element) which anticipates or renders obvious the claimed invention, but has basis for shifting the burden of proof to applicants as in ***In re Fitzgerald***, 619 F. 2d 67, 205 USPQ 594 (CCPA 1980). See M.P.E.P. §§ 2112 – 2112.02.

15. Concerning claims 39 and 45, Stoyell et al. disclose a filter element comprising a cylindrical filter media (10) and an exoskeleton support screen (50) for the media (10), the filter media (10) comprising a plurality of longitudinally extending pleats (11) having radially inner peaks (11c) defining an inner diameter, radially outer peaks (11b) defining an outer diameter and side walls (11a, 11d) extending therebetween and the support screen (50) comprising a sheet of screen material (50 in the form of a porous film, mesh sheet or porous fabric) being thermally bonded (i.e. by fusion bonding) to each of the radially outer peaks (11b) thereby exoskeletonally supporting the pleats (11) in a spaced (here, it is considered "spaced" to be any point of distance including close to zero) and non-collapsed condition, as in figs. 3 – 4 and 22 and in cols. 3 – 6 and 17 – 23 (claim 45). Stoyell et al. further discloses the support screen (50) having a length of at least approximately equal to the circumferential dimension of the filter media plus a seam allowance, for overlap welding or bonding of the ends of the screen to form a tight/circumferential wrap support around the filter media, as in cols. 22 – 23. Although Stoyell et al. do not disclose the support screen having a width approximately equal to the axial dimension of the filter media, it is considered obvious to one of ordinary skill in the art, if the

wrap/support screen (50) was chosen to be not helically but only circumferentially around the media, that one of ordinary skill in the art would cut a piece of wrap/support screen with a width approximately equal to the axial length of the filter media in order to prevent waste of support materials, to envelop the pleats of the filter media. Stoyell et al. also disclose the sheet of screen material having lateral edges being joined together at a side seam (formed by adjacent end edges of the septum/wrap 50 being overlapped and welded/bonded together), as in col. 23, lines 5 – 13.

16. Regarding claim 40, since the sheet of support material (50) being circumferentially wrapped around the filter media (10), as disclosed by Stoyell et al. in col. 22, the side seam which would result from an overlapped welding/bonding of end edges of the support screen material (50) circumferentially wrapped around the media (10), as in col. 23, would have to be (obviously) extending substantially parallel to the longitudinal axis of the media (10).

17. With regards to claim 41, Stoyell et al. further disclose the end/lateral edges of the support screen material (50) overlapping and non-adhesively thermally bonded (by fusion bonding or welding) together, as in col. 23, lines 5 – 13.

18. Concerning claims 42 – 43, Stoyell et al. disclose the support screen (wrap 50, in the form of a porous polymeric/extruded mesh sheet) being made of a porous polymeric or glass nonwoven material, as in col. 17, lines 40 – 53, col. 18, lines 39 – 61 and col. 22, lines 29 – 38. It is considered known in the art that PVC coated fiberglass is among those considered to be a

porous polymeric mesh/extruded (plastic) mesh material. The case law ***In re Leshin***, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) stated that a prima case of obviousness exists in a selection of a known plastic (i.e. PVC coated fiberglass) to make a container of a type made of plastics/polymer prior to the invention. It is considered obvious to one of ordinary skill in the art to modify the material of the inner and outer layers from simply just a polymer or glass nonwoven material to particularly that of PVC coated fiberglass, in order to provide a support/drainage layers which are physically stronger but has enough flexibility (to allow the material to be pleated) like those only made of synthetic polymers and will not break easily (i.e. more durable compared to those made of only glass fibers).

19. Regarding claim 44, here, the examiner has considered the features being claimed by claim 44 is considered to be "an intermediate product" of the final product (i.e. the filter element having the support screen with its lateral edges joined to form an exoskeleton support around the cylindrical filter media). With regards to the sheet of screen material (50) prior to being circumferentially wrapped around the filter media (10) and its lateral edges being joined together at the side seam (to form the side seam), it is considered obvious and well-known to one of ordinary skill in the art that support screen materials, such as those used as septum/wrap (50) of Stoyell et al. may come in different sizes and configurations (shapes), and including those rectangular in shape. Cylindrical tubes/shapes which would be the end result of the support screen material once it is wrapped around the (cylindrical) filter media, generally come/made from rectangular pieces of material which had been bent or rolled into a tubular or cylindrical

form. (See US 3,306,794 (Humbert Jr.), figs. 9 - 10 for making a cylindrical tube/support 44 from a rectangular piece of material prior to its lateral edges/ends being joined together to form the cylindrical tube/support)

20. Claims 4 – 5, 26 and 59 - 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoyell et al. in view of Miller et al. (US 5,552,048).

21. With respect to claim 4, Stoyell et al. has disclosed the support screen/wrap (50) being in a form of a polymeric thermal-bondable (i.e. a mesh which is bondable by fusion bonding) mesh, but failed to disclose having cords which form a grid of approximately about 0.060 inch to about 0.150 inch by 0.060 inch to about 0.150 inch openings which are aligned with a longitudinal axis of the filter media. Miller et al. teach a similar pleated filter element to that of Stoyell et al. having a support screen or wrap member (70) in the form of a thermal bondable mesh (71) having cords forming a grid of openings (72) which are aligned with a longitudinal axis of the filter media, as in fig. 9 and in col. 11, lines 59 – 67 and col. 12, lines 1 – 5. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the configuration (i.e. from a simple porous non-woven mesh sheet) to that of a mesh with cords forming a grid of openings aligned with a longitudinal axis of the media, as taught by Miller et al, to provide an alternative design/form for the wrap/support screen of Stoyell et al., which provides flow openings which allow constant and uniform fluid flow therethrough but at the same time added support and physical strength to the overall filter element. Although Stoyell

et al. as modified by Miller et al. fail to teach the (size of the) openings being approximately about 0.060 inch to about 0.150 inch by 0.060 inch to about 0.150 inch, it is considered by the examiner that these range of values claimed by the applicant for the openings can be modified to any specific size and the claimed range of values being optimum values of a result effective variable which depends upon the properties of the fluid being filtered, desired flow rate through the support screen and other factors. In other words, the size of the openings of the mesh forming the support screen/wrap of the filter element would change depending upon the size of particulates being filtered from the fluid and the desired flow rate (dependent upon the open space for flow) through the support screen towards the filter media/filtration layers without sacrificing the physical integrity of the support screen.

22. Regarding claim 5, Stoyell et al. has disclosed the support screen/wrap (50) being fusion-bonded to the radially outer peaks (11b) of the filter media (10), as in fig. 22 and col. 22.

23. With respect to claim 26, Stoyell et al. disclose a filter element comprising a cylindrical filter media (10) and an exoskeleton support structure (50) for the filter media (10), the cylindrical filter media (10) comprising a plurality of longitudinally extending pleats (11) having radially inner peaks (11c) defining an inner diameter, radially outer peaks (11b) defining an outer diameter and side walls (11d, 11a) extending therebetween, the exoskeleton structure comprising a support screen (here the term "screen" has been defined by the examiner as any porous film, mesh or fabric), in the form of a wrap 50, as in figs. 3 – 4 & 22 and in cols. 3 – 7

and cols. 17 – 22. Stoyell et al. fail to disclose the support screen having a first set of cords extending in a first direction, a second set of cords extending in a second direction and intersecting with the first set of cords and openings defined therebetween, the cords being attached to each of the radially outer peaks thereby exoskeletonally supporting the pleats in an appropriately spaced and non-collapsed condition and adjacent cords in the first set being separated from each other by a distance d_1, adjacent cords in the second set being separated from each other by a distance d_2, and adjacent radially outer peaks being separated from each other by a distance d_{pleat}, and the distance d_1 between the first set of cords being about ½ to about twice (2x) the distance d_{pleat} between adjacent radially outer peaks wherein the support screen is non-adhesively attached to the peaks. Miller et al. teach a similar pleated filter element to that of Stoyell et al. having a support screen or wrap member (70) in the form of a support screen/mesh (71) having a first set of cords extending in a first direction (i.e. those extending from top left to bottom right of the filter), a second set of cords extending in a second direction and intersecting with the first set of cords (i.e. those in transverse or perpendicular in direction to the first set) and openings (72) defined therebetween, the cords being attached (fusion bonded) to each of the radially outer peaks thereby exoskeletonally supporting the pleats in an appropriately spaced and non-collapsed condition and adjacent cords in the first set being separated from each other by a distance d_1, adjacent cords in the second set being separated from each other by a distance d_2, and adjacent radially outer peaks being separated from each other by a distance d_{pleat} (not shown), as in fig. 9 and in col. 11, lines 59 – 67 and col. 12, lines 1 – 5. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the configuration (i.e.

from a simple porous non-woven mesh sheet) to that of a mesh with cords forming a grid of openings aligned with a longitudinal axis of the media, as taught by Miller et al, to provide an alternative design/form for the wrap/support screen of Stoyell et al., which provides flow openings which allow constant and uniform fluid flow therethrough but at the same time added support and physical strength to the overall filter element. As a result of the combination of the teachings of Stoyell et al. and Miller et al. (which is simply substituting a mesh type wrap shown in fig. 9 of Miller et al. for the porous sheet wrap of Stoyell et al.), the resulting filter element would obviously have the support screen (in the form of the mesh 71) in such a way that the distance d_1 between the first set of cords being about ½ to about twice (2x) the distance d_{pleat} between adjacent radially outer peaks (which in this combination, the distance between adjacent radially outer peaks 11b are very small as shown by Stoyell et al. in fig. 3). As already mentioned, the support screen (50, 71) is non-adhesively attached (i.e. by fusion bonding) to the peaks (11b) of the filter media (10), as in col. 18, lines 39 – 43 of Stoyell et al..

24. Concerning claim 59, Stoyell e al. also disclose the support screen (50) being thermally-bonded (i.e. fusion-bonded) to the (outer) peaks (11b) of the filter element (10), as in fig. 22 and col. 18, lines 39 – 43.

25. With regards to claim 60, Stoyell et al. disclose the support screen (a wrap in the form of a porous polymeric/extruded mesh sheet 50) being made of a porous, polymeric or glass nonwoven material, as in col. 17, lines 40 – 53, col. 18, lines 39 – 61 and col. 22, lines 29 – 38.

It is considered known in the art that PVC coated fiberglass is among those considered to be a porous polymeric mesh/extruded (plastic) mesh material. The case law ***In re Leshin***, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) stated that a prima case of obviousness exists in a selection of a known plastic (i.e. PVC coated fiberglass) to make a container of a type made of plastics/polymer prior to the invention. It is considered obvious to one of ordinary skill in the art to modify the material of the inner and outer layers from simply just a polymer or glass nonwoven material to particularly that of PVC coated fiberglass, in order to provide a support/drainage layers which are physically stronger but has enough flexibility (to allow the material to be pleated) like those only made of synthetic polymers and will not break easily (i.e. more durable compared to those made of only glass fibers).

26. Regarding claim 61, Stoyell et al. further discloses the wrap member/support screen (50) comprising a (nonwoven or polymeric) mesh sheet/material having lateral edges joined together to form a side seam (formed by overlapped edges) which extends substantially the length of the longitudinal axis of the filter media (10), by having the wrap member (50) being wrapped circumferentially all around the filter media (10), as in col. 18, lines 65 – 67, instead of having the wrap/screen (50) wrapped helically around the media as shown in fig. 22.

27. Concerning claim 62, Stoyell et al. also discloses the lateral edges of the screen/wrap (50) overlapping and thermally bonded (i.e. fusion bonded) together (in particular, when it is circumferentially wrapped around the media 10), as in col. 23, lines 9 – 13.

28. With regards to claim 63, Stoyell et al. disclose the support screen (wrap 50, in the form of a porous polymeric/extruded mesh sheet) being made of a porous polymeric or glass nonwoven material, as in col. 17, lines 40 – 53, col. 18, lines 39 – 61 and col. 22, lines 29 – 38. It is considered known in the art that PVC coated fiberglass is among those considered to be a porous polymeric mesh/extruded (plastic) mesh material. The case law ***In re Leshin***, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) stated that a prima case of obviousness exists in a selection of a known plastic (i.e. PVC coated fiberglass) to make a container of a type made of plastics/polymer prior to the invention. It is considered obvious to one of ordinary skill in the art to modify the material of the inner and outer layers from simply just a polymer or glass nonwoven material to particularly that of PVC coated fiberglass, in order to provide a support/drainage layers which are physically stronger but has enough flexibility (to allow the material to be pleated) like those only made of synthetic polymers and will not break easily (i.e. more durable compared to those made of only glass fibers).

29. Claims 6 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoyell et al. in view of Miyagi et al. (US 4,588,464).

30. Concerning claims 6 - 7, Stoyell et al. fail to disclose the plurality of longitudinally extending pleats (11) including two end pleats joined together at a side seam, wherein the side seam comprising an adhesive bead encapsulating all the layers (i.e. filtration and inner & outer

layers, 12 – 14) in distal ends of the end pleats (claim 6) and the adhesive bead extending radially inward between the end pleats (claim 7). Miyagi et al. teach a similar pleated filter element to that of Stoyell et al. comprising an exoskeleton support structure (13) surrounding/supporting a cylindrical filter media (3) including a filtration layer (1) sandwiched between inner and outer layers (2), the filtration layer (1) being made of a polymer in the form of a fluorocarbon membrane, and the inner and outer layers (2) also formed of nonwoven polymer in the form of thermoplastic fluorocarbons and the media (3) having a plurality of longitudinally extending pleats including two end pleats (9) being joined together at a side seam wherein the side seam comprising an adhesive bead (11, also formed of a thermoplastic fluorocarbon resin) encapsulating all the layers (i.e. filtration and inner & outer layers, 1 & 2) in distal ends of the end pleats (claim 6), and the adhesive bead (11) extending radially inward between the end pleats (claim 7), as in figs. 1, 4 and 7 and cols. 2 - 4. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter element by modifying the cylindrical filter media of Stoyell et al. by adding the embodiment (i.e. forming end pleats and encapsulating them with an adhesive bead extending radially inward of the pleats) taught by Miyagi et al., in order to provide an improved filter element which provides a cylindrical filter media which would not collapse and get unfolded (lose its cylindrical shape) during use and prior to placing the outer support or exoskeleton around its outer peripheries, thereby preserving the pleated configuration of the filter.

31. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagi et al. (US 4,588,464) in view of Stoyell et al. (US 5,690,765).

32. With respect to claim 23, Miyagi et al. further disclose the filter element in claim 20 (see paragraph 4 above) and an exoskeleton support structure (13) surrounding the filter media (3), but fail to disclose the exoskeleton structure being attached to the radially outward peaks of each of the **pleats** (here, the highlighted "pleats" are considered to be referring to the plurality of longitudinally extending pleats, and not just the end pleats). Stoyell et al. teach a similar pleated filter element to that of Miyagi et al., comprising a cylindrical filter media (10) having a plurality of longitudinally extending pleats (11), each pleat having a radially inner peak (11c) and a radially outer peak (11b) and an exoskeleton support structure (wrap 50 in the form of a nonwoven mesh sheet) surrounding the filter media (10) and being attached (by fusion bonding) to the radially outward peaks (11b) of the pleats (11) of the filter media (10), as in figs. 3 – 4, 22 and cols. 3 – 6 and 17 – 23. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter element of Miyagi et al. by adding the embodiment taught by Stoyell et al., in order to provide an improved filter element which provides a strong and permanent support screen/structure for the cylindrical pleated media at the same time, ensures and retains the pleated configuration and spacing/distance between pleats, particularly in the laid over state (shown by Stoyell et al.), as in col. 17.

Response to Arguments

33. Applicant's arguments with respect to claims 1 – 7, 10, 18 – 20, 22 – 23, 25 – 26, 39 – 45 and 53 - 65 have been considered but are moot in view of the new grounds of rejection presented above. **This action is non-final.**

Allowable Subject Matter

34. Claim 46 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 52 also contain allowable subject matter.

35. The following is a statement of reasons for the indication of allowable subject matter: none of the prior art searched and mentioned above has disclosed or rendered obvious a filter element having the limitation of the (exoskeleton structure) support screen being thermally bonded (which is considered to be equivalent to *non-adhesively bonded/not using any adhesives for bonding*) to each of the radially inward peaks of the cylindrical media, as in claim 46. Furthermore, none of the prior art searched and mentioned above has disclosed or rendered obvious a filter element having the limitation of the (exoskeleton structure) support screen being non-adhesively bonded (i.e. *not using any adhesives for bonding*) to each of the radially inward peaks of the pleats of the cylindrical media, as in claim 52.

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents 5,543,047 (Stoyell et al.), 5,443,724 (Williamson et al.), 3,306,794 (Humbert Jr.) and 3,216,578 (Wright et al.).

37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne S. Ocampo whose telephone number is (703) 305-1039. The examiner can normally be reached on Mondays to Fridays from 8:00 A.M. to 4:30 P.M..

38. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on (703) 308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

39. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

MSO
M.S.O.
February 19, 2003

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